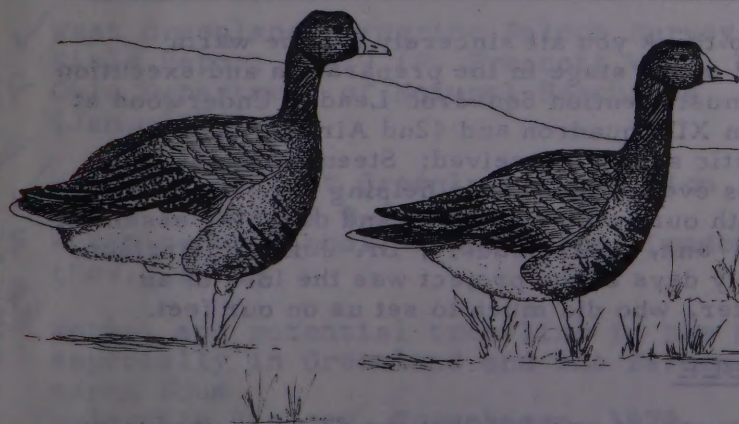


# GREENLAND WHITE-FRONTED GOOSE STUDY

## Preliminary Report



FOALUNGMIUT NUNÂT

5th May - 20th August 1979

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H. Boyd  
Dr. J. Harrison (dec'd.)  
Dr. M. Owen

INTRODUCTION

This report has been produced by the Greenland White-fronted Goose Study as a preliminary to the main report, with the following rationale :

1. As an announcement of the successful completion of the expedition.
2. As an expression of thanks to everyone involved.
3. As an introduction to the main report which will follow.
4. As a newsletter for those interested in contacting or keeping in touch with the group.

TO OUR SUPPORTERS, SPONSORS, AND EVERYONE WHO HAS HELPED :

May I take this opportunity to thank you all sincerely for the warm response which has accompanied every stage in the preparation and execution of this project. In particular I must mention Squadron Leader Underwood at the M.O.D., and our crews from XII Squadron and 42nd Air Despatch at Lyneham for the invaluable logistic support received; Steen Malmquist at Søndre Strømfjord for showing us every kindness in helping our liaison with the authorities there, dealing with our radio messages and dropping essential extra supplies from his aircraft; and, posthumously, Dr. Jeffrey Harrison, whose deeply felt loss in the early days of the project was the loss of an enthusiastic and friendly supporter, who did much to set us on our feet.

EXTRA INFORMATION AVAILABLE

During the drafting of this report, it was felt that the delay in producing the final report was unacceptable in that we are concerned that people planning an expedition at this moment should benefit from our own experience with respect to food, equipment, etc. As such, we hope to make this information available as offprints in the near future, and anyone interested in obtaining it should write to the expedition at :

SCHOOL OF BIOLOGICAL SCIENCES  
UNIVERSITY COLLEGE OF WALES  
PENGLAIS, ABERYSTWYTH,  
DYFED, WALES.

Any other enquiries should also be directed here. Further copies of this report can be obtained for 20p (includes postage). Advance orders for the final report would be welcome to give some idea of demand.

William J. Higgs,  
Secretary to the Expedition.



Geoscience (contd.)

- ✓ Durham University Polar East Greenland Expedition 1979  
General Report (Bill Rigden e.a.)  
F Durham University, England, March 1980  
(June 1980)

Bioscience

- Vegetation of the Angmagssalik District, Southeast Greenland.  
IV. Shrub, dwarf shrub and terricolous lichen vegetation  
F. J. A. Daniëls  
Doctoral thesis to the University of Utrecht, Holland, July 1980  
(June, 1980)

- ✓ Greenland White-Fronted Goose Study  
Preliminary Report, 5th May - 20th August, 1979  
F Dept, of Zoology, University College of Wales, Aberystwyth  
(March, 1980)

- B West Greenland Peregrine Falcon Survey, 1978  
William G. Mattox e.a.  
"Arctic", Vol. 33, No. 1, March 1980  
(June, 1980)

University College of Wales  
Aberystwyth,  
Great Britain

- ✓ West Greenland Peregrine Falcon Survey  
Field Report, 1979 (F. Prescott Ward, William G. Mattox)  
F Ohio Department of Natural Resources  
(Jan, 1980)

- ✓ Westminster East Greenland Expedition 1978  
W. S. L. Wolley e.a.  
F Westminster School, Westminster, London SW 1P 2NA  
(Nov., 1979)

- Actual and potential tree-line in the North Atlantic region,  
especially in Greenland and the Faroes  
Søren Ødum  
F Holarctic Ecology, Copenhagen, 1979  
(Dec., 1979)

Man and Society

- Material Culture of the Numa (John Wesley Powell Collection)  
Don D. Fowler and John F. Matley  
Smithsonian Institution Press, Washington D.C., 1979  
(June, 1980)

Geographical (1980)

British University, London, England, March 1980  
(June 1980)

Bioscience

Vegetation of the Anglesic Islands, Bornholm, Denmark  
IV. Shrub, dwarf and herbaceous life vegetation  
F. J. A. Daniëls  
Doctoral thesis at the University of Groningen, Holland, July 1980  
(June 1980)

Greenland White-fronted Goose Study  
The following report is a preliminary report on the  
study of ecology, behaviour, and migration of the  
(March 1980)

West Greenland Invertebrate Fauna Survey  
William D. Buxton  
Ph.D. thesis, University of London, 1980  
(June 1980)

West Greenland Invertebrate Fauna Survey  
Ph.D. thesis, University of London, 1980  
(June 1980)

West Greenland Invertebrate Fauna Survey  
Ph.D. thesis, University of London, 1980  
(June 1980)

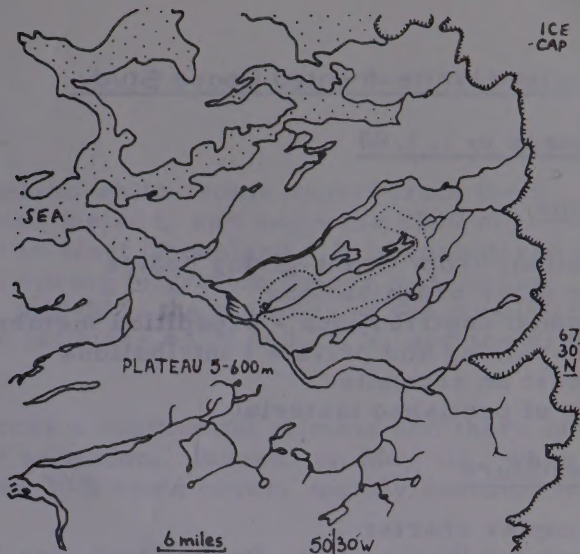
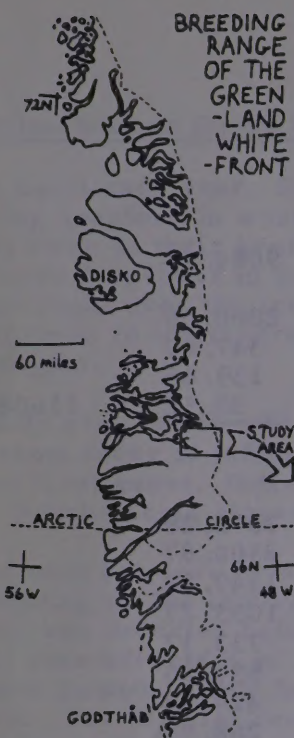
Actual and potential tree-line in the North Atlantic region,  
especially in Greenland and the Faroe Islands  
Ph.D. thesis, University of London, 1980  
(June 1980)

Man and Society  
Ph.D. thesis, University of London, 1980  
(June 1980)

Man and Society  
Ph.D. thesis, University of London, 1980  
(June 1980)

Man and Society  
Ph.D. thesis, University of London, 1980  
(June 1980)





MAP TO SHOW STUDY AREA IN ITS  
GEOGRAPHICAL CONTEXT.

□ Area within which geese were ringed.

## STUDY AREA

The study area was bounded by the melt-rivers, which were virtually uncrossable.

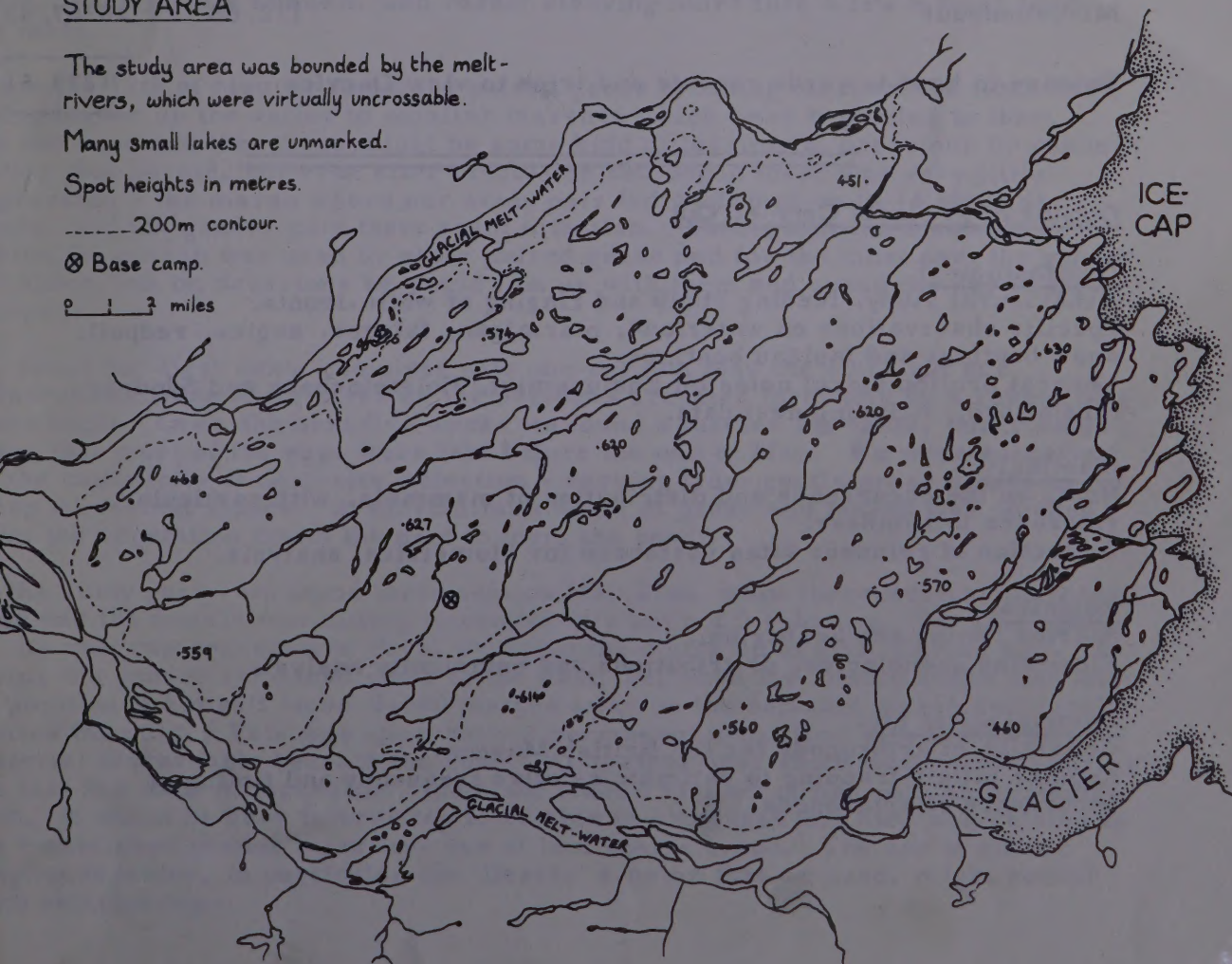
Many small lakes are unmarked.

Spot heights in metres.

----- 200m contour.

⊗ Base camp.

0 1 2 miles





## Greenland White-fronted Goose Study

### Accounts to 1. 1. 80

#### Income

Donations from Grant-giving bodies and other organisations	9084. 77	
Personal contributions - expedition members	2000. 00	
Fund-raising and private contributions	347. 00	
Interest on accounts	139. 65	
Sales of published material	35. 52	= 11606. 94

#### Expenditure

Helicopter charter	3072. 28	
Equipment (boats, nets, flares, fuel, etc.)	2300. 87	
Expenses in Greenland	1349. 23	
Photographic equipment and films	1053. 27	
Scheduled air travel	733. 12	
Food	539. 26	
Office expenditure and stationery	424. 44	
Trip to Copenhagen	268. 95	
Insurance	250. 00	
Medical supplies	143. 37	
Maps and aerial photographs	119. 96	
Miscellaneous	112. 68	= 10367. 43

Balance in hand towards reports and trips to view Darvics	1239. 51
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### Outline of Projects Carried Out

#### Ornithological

Behavioural study, feeding study and ringing of white-fronts.  
Specific observations on waterfowl, ptarmigan, falcons, eagles, redpoll, snow buntings and lapland buntings.  
General ornithological notes on Eqaungmiut, Holsteinsborg and Søndre-Strømfjord, including nest data.

#### Mammal

Notes on the occurrence and distribution of mammals, with particular reference to reindeer.  
Collection of reindeer atlas vertebrae for biometrical analysis.

#### Botanical

Species listing and herbarium.  
Flowering phenologies, distributions and community analysis.

#### Entomological etc.

Collection of arthropods for the British Museum.  
Regular pitfall-trapping to estimate relative frequency and timing of occurrence of arthropods.



## The White-fronted Goose in Greenland

In late April each year, flocks of Greenland white-fronts depart from their wintering quarters in western Britain and Ireland, and begin the 2000 mile journey back to their breeding grounds in West Greenland. It is considered that most birds stop-over in Iceland on this spring migration before making the arduous flight over the ice-cap, but by mid-May the majority of the population has returned to the tundra belt between latitudes  $64^{\circ}\text{N}$  and  $73^{\circ}\text{N}$ , and the breeding cycle begins.

Our study area, at  $67^{\circ} 30' \text{N}$ , experiences a continental climate and there is little snow cover to influence nest-site selection. Indeed, on May 7th, when we saw our first geese, there was less than 20% snow cover, mostly confined to steep, North-facing slopes.

For the next ten days or so small flocks of geese began to pass through the area, congregating on the low-lying marshes adjacent to the fjord-head. A maximum of 93 birds was detected before they began to disperse. Here the geese, already paired, take advantage of the nutritious new vegetation growing in the few pools that have thawed. They feed mainly on Hippuris (Mare's tail) and various grasses. The females feed ravenously, preparing for the three to four week vigil of incubation when their opportunities for feeding will be limited - the less often they have to leave their eggs to feed the fewer chances there are for predators to strike. During this arrival period, the gander is very attentive and alert, feeding little himself, and rarely straying more than a few metres from his mate.

From the 12th of May we found the paired geese breaking off from the flocks and flying higher up the valley to smaller marshes which were beginning to thaw. We had expected that there might be some kind of territorial behaviour by Ganders during this period, but even after incubation had begun there was very little aggression - the marsh where our study pair fed contained up to 14 birds at times, and the gander paid them scant attention. Throughout the incubation period the marsh was used by other paired geese and for the most part the gander fed alone, but on occasions he would join up with them and spend the day in their company.

We found our first nest, complete with one egg, on May the 19th, but our celebrations were short-lived as the nest was predated (probably by a raven) that same night. Over the next five weeks we found a further six nests, but it would seem that most of the eggs were laid before the end of May. We were surprised by the catholicity of nest-site selection - varying from gentle grass slopes to steep moss-mat slopes. A substantial amount of grass and leaves was plucked from the vegetation round the nest to form the bowl.

Of the study pair - we found their nest on May 27th, when there were already four eggs and the female was sitting intermittently but not incubating. She laid again on the next two consecutive days, bringing the clutch up to six. During egg-laying the gander remained close to the nest, but when the female began incubating he positioned himself some 2-300 metres away on the adjacent marsh and rarely visited the nest. This was apparently a permanent nest site, with layers of material discernable beneath the bowl. At another nest which was watched during the last few days of incubation, the male shared vigilant duties with an immature bird. It would be very interesting to be able to show that this bird was related to the established gander - perhaps one of last year's brood. The use of colour ringing schemes, in particular the 'Darvic' scheme that we used, might reveal such relationships.



During incubation, which lasted 24 days for our study pair, the female generally left the nest for about twenty minutes to feed, wash and preen with the gander each day, and this continued right up until the day before hatching. In the final two days there was a noticeable change in the behaviour of both birds - the male spent more time near the nest and was very attentive, and the normally placid goose became fidgety.

Very close to midnight on midsummer's night the first gosling stepped forth from the nest bowl and tottered about in front of a proud mother. By morning there were four more yellow-grey balls jostling for attention. For the first few hours they stumbled around in the vicinity of the nest, and after eight hours started to peck at various items. As the goslings became stronger the family began walking across the nearby marsh. We had expected them to remain nearby, but instead they kept on going up a nearby hillside, and by 2100 hours that same day, when lost from sight, they had walked two kilometres and climbed 200m to the plateau.

The fledging period coincided with the adults' moult, so that both goslings and parents became flighted simultaneously. This sojourn was spent among the small lakes on the plateau at an altitude of about 500m. At first our family was alone, but gradually other families travelling among the lakes joined them until by August there was a family flock on 'Axewater' comprising five families (10 adults and 17 young). They fed around the edges of the lakes, with the gander almost continually alert while the goose and her goslings grazed voraciously. These goslings were first seen to fly on the 15th of August, and were still feeding on the lakeside when we left five days later. (A family in another area, while not keen to fly, were chivvied into the air during a catching attempt on 10th of August.)

It is interesting to note that the family parties kept apart from the flocks of non-breeders, which more or less vacated the valley and established themselves on the plateau lakes by the beginning of June. The first flightless bird was observed on the 30th, and it was considered that all the non-breeders could fly again by July 28th. These birds gathered into small flocks of up to 24 on select lakes, but if disturbed, would leave the water and travel across the tundra for a surprising distance - our only retrap of ringed birds showed that they had moved  $8\frac{1}{2}$  kilometres in three days.

We had an area of about 350 square miles accessible to us, and we estimated a population of 200-250 whitefronts summering in that region. We located only about 15 families, the rest of the birds being immatures or non breeders through accident or design. Predation seemed high - out of seven nests found four were predated, but this may be attributable to observer disturbance. Arctic foxes and ravens were common, and were certainly the culprits, but the remains of three geese we found indicated that they had been killed by foxes. Gyrfalcons were seen to disturb goose flocks without success.

By the 20th of August, when we left Eqaungmiut Nunat, the geese were showing signs of restlessness. It is not certain when they leave the breeding grounds, but it cannot be long after this, for following a stop-over in Iceland they begin to arrive in Britain and Ireland in October.



RINGING REPORT

	EQALUNGMIUT	HOLSTEINSBORG	SANDRE STRØMFJORD	FG	PULLI	TOTAL
Anser albifrons	96			67	29	96
Anas platyrhynchos	7			4	3	7
Lagopus mutus	1			1		1
Phalaropus lobatus	11			3	8	11
Larus glaucoides	9				9	9
Larus hyperboreus	11				11	11
Oenanthe oenanthe	104	1	4	94	15	109
Carduelis flammea	251	106	310	662	5	667
Carduelis hornemanni			2	2		2
Calcarius lapponicus	676		31	555	152	707
Plectrophenax nivalis	38	33		34	37	71
TOTAL	1204	140	347	1422	269	1691

An area of approximately 750 km<sup>2</sup> was covered during the moult, and was estimated to contain about 200 white-fronts. As well as the Copenhagen ring, all but one full-grown with a leg injury were marked with a large-numbered white Darvic ring on the right leg. Mean size of ten broods ringed was 3.5 young.

Moulting geese could be divided into two groups : early (non or failed breeders, 52 ringed) which started the moult in the first week of July and finished in the last, and late (breeders, 15 ringed) which started in the third week of July and finished in the second week of August, coinciding with the first flight of the young. The moult took about three weeks, and both groups of birds were able to increase their weight during the latter half. Moulting whitefronts weighed from 1.9 to 2.8 kg, mean 2.37 (n = 67).

So far (December 79), over 20 Darviced birds have been detected on the wintering grounds, all in Scotland - on the Mull of Kintyre, the Isle of Islay, and near Thurso. Ten rings have been read and four ringed geese have been shot - one in Iceland and the others in Scotland.

Further records of ringed birds would be much appreciated, giving if possible the serial number of the Darvic ring (which can be read through a telescope), the date and the locality; the initial letter falls nearest the lower end of the tarsus. Other details (adult, immature, pair, family size, flock size, etc.) should be carefully checked. The subspecies winters in Ireland, Scotland and Wales, October to April, with occasional records in E. North America. Observers in all parts of the range are asked to scan flocks for marked birds, and maps showing the location of detected birds are available for the expedition for anyone contemplating serious attempts to re-check them. (In future seasons, too). All sightings should be sent to:  
P.J. BELMAN, 107 GRANGE ROAD, EALING, LONDON W5 3PH.



## ACKNOWLEDGEMENTS

### Principal Financial Supporters

Department of Fisheries and Forestry,  
Dublin  
NATO Eco-Sciences Panel  
WAGBI for Shooting and Conservation  
World Wildlife Fund, Denmark

### Other Financial Supporters

Bass Charrington Ltd.  
British Ecological Society  
Conder Conservation Trust  
Drapers' Company  
Dulverton Trust  
Dyfi and District Wildfowlers Association  
Dyfi Wildfowl Management Panel  
Ernest Kleinwort Charities  
Fauna Preservation Society  
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Owen Owen Estates  
Premier Polish Ltd.  
Scott Polar Research Institute  
Scottish Ornithologists' Club  
Vincent Wildlife Trust  
Welsh Plant Breeding Station  
West Wales Naturalists' Trust  
West Worcestershire and District  
Wildfowling and Rough Shooting Club  
Whitley Animal Protection Trust

### We are grateful for official support and advice from the following:

Grønlands Geologisk Undersøgelese  
Royal Air Force  
Royal Geographical Society (Approval)  
Wildfowl Trust  
United States Air Force, Søndre Strømfjord  
University College of Wales, Aberystwyth;  
in particular  
Dept. of Botany and Microbiology -  
administrative facilities  
Alexandra Hall of Residence - storage  
Dept. of Geography - mapping  
Dept. of Physics - time lapse units  
Dept. of Zoology - typing  
Zoologisk Museum, Copenhagen

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### We would like to thank the following individuals for their help and advice:

Dr. A. D. Q. Agnew  
H. Boyd  
J. Broon  
W. Burnham  
Mrs. J. Crawford  
H. Fencker  
Mrs. G. Gifford  
Mr. Gordon  
Dr. I. Inglis  
Mr. Matthewman  
Dr. W. Mattox  
O. Merne  
M. Ogilvie  
Dr. M. Owen  
Dr. F. Salomonsen  
Dr. J. P. Savidge  
Mr. Westergaard  
A. White

### Thanks for the loan of high-quality radio equipment to:

Racal Ltd.

Finally, apologies to those we have omitted.



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AUTHOR Greenland White-Fronted Goose Study

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